

CLAIMS

What is claimed is:

1. A manipulator assembly for attachment to a bucket of a construction vehicle, said assembly comprising:

- 5 a housing;
a utility tool supported by said housing;
at least one mounting bracket connected to said housing;
at least one mounting arm having a first end and a second end, said first end being connected to said mounting bracket;
10 a quick-release connector mounted to said second end of said mounting arm for selectively securing said housing to the bucket, and a biasing device disposed on said quick-release connector for continuously urging said quick-release connector into engagement with the bucket, wherein the bucket remains free of said quick-release connector and said biasing device when said utility tool is removed from the
15 bucket.

2. An assembly as set forth in claim 1 wherein said quick-release connector further includes a support extending from said mounting arm having a support hole therein and said mounting arm having an arm hole, such that said arm
20 hole and said support hole are co-linear.

3. An assembly as set forth in claim 2 wherein said quick-release connector further includes a pin supported by said support, such that said pin is extendable through said support hole and said arm hole for engaging the bucket.

4. An assembly as set forth in claim 3 wherein said biasing device further includes a spring engaging said pin and either one of said support and said mounting arm for biasing said pin through said arm hole.

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5. An assembly as set forth in claim 4 wherein said quick-release connector further includes a stop engaging said pin, said stop being rotatable between a locked position and an unlocked position.

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6. An assembly as set forth in claim 5 wherein said stop is further defined as having a flat portion and a leg portion, such that in said locked position said flat portion engages said support and in said unlocked position said leg portion engages said support.

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7. An assembly as set forth in claim 6 wherein said pin further includes a handle for rotating said stop between said locked position and said unlocked position.

8. An assembly as set forth in claim 7 wherein said mounting bracket further includes attachment points for allowing said mounting arm to attach to said housing such that said mounting arm accommodates buckets of different dimensions.

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9. An assembly as set forth in claim 8 further including a spreader bar extending between said mounting arms, such that said spreader bar is extendable for allowing said mounting arms to engage different attachment points of said mounting brackets to accommodate buckets of different dimensions.

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10. An assembly as set forth in claim 9 wherein said mounting arms further include feet positioned adjacent said quick-release connector for allowing said utility tool to pivot relative to said bucket.

10 11. An assembly as set forth in claim 10 wherein said mounting arms further include a mounting channel for engaging said mounting brackets on said housing.

12. An assembly as set forth in claim 11 wherein said mounting arms are
15 further defined as Z-shaped mounting arms.

13. An assembly as set forth in claim 1 further including a step extending from said housing.

20 14. An assembly as set forth in claim 1 wherein said utility tool is a broom.

15. An assembly as set forth in claim 1 wherein said utility tool is comprised of a metal material.

16. An assembly as set forth in claim 1 wherein said utility tool is comprised of a plastic material.

17. An assembly as set forth in claim 1 further including a universal
5 bracket interconnecting said bucket and said quick-release connector.

18. A universal attachment apparatus for attaching a utility tool to a bucket of a construction vehicle, said apparatus comprising:

a housing adapted to support the utility tool;

10 at least one mounting bracket connected to said housing;

at least one mounting arm having a first end and a second end, said
first end being connected to said mounting bracket;

a quick-release connector mounted to said second end of said mounting
arm for selectively securing said housing to the bucket, and a biasing device disposed
15 on said quick-release connector for continuously urging said quick-release connector
into engagement with the bucket, wherein the bucket remains free of said quick-
release connector and said biasing device when said utility tool is removed from the
bucket.

20 19. An apparatus as set forth in claim 18 wherein said quick-release
connector further includes a support extending from said mounting arm, said support
having a support hole therein and said mounting arm having an arm hole, such that
said arm hole is adjacent said support hole.

20. An apparatus as set forth in claim 19 wherein said quick-release connector further includes a pin, such that said pin is extendable through said support hole and said arm hole for engaging a hole in the bucket.

5 21. An apparatus as set forth in claim 20 wherein said biasing device further includes a spring engaging said pin and said support for biasing said pin through said arm hole for engagement of the hole in the bucket.

22. An apparatus as set forth in claim 21 wherein said quick-release
10 connector further includes a stop engaging said pin, said stop being rotatable between a locked position and an unlocked position.

23. An apparatus as set forth in claim 22 wherein said stop is further
defined as having a flat portion and a leg portion, such that in said locked position
15 said flat portion engages said support and in said unlocked position said leg portion engages said support.

24. An apparatus as set forth in claim 23 wherein said pin further includes
a handle for rotating said stop between said locked position and said unlocked
20 position.

25. An apparatus as set forth in claim 18 wherein said mounting bracket further include attachment points for allowing said mounting arm to attach to said housing such that said mounting arm accommodates buckets of different dimensions.

26. An apparatus as set forth in claim 25 further including a spreader bar extending between said mounting arms, such that said spreader bar is extendable for allowing said mounting arms to engage different attachment points of said mounting
5 brackets to accommodate buckets of different dimensions.

27. An apparatus as set forth in claim 18 wherein said mounting arms further include feet positioned adjacent said quick-release connector for allowing said housing to pivot relative to said bucket.

10 28. An apparatus as set forth in claim 18 wherein said mounting arms further include a mounting channel for engaging said mounting brackets on said housing.

15 29. An apparatus as set forth in claim 18 wherein said mounting arms are further defined as Z-shaped mounting arms.

30. An apparatus as set forth in claim 18 further including a step extending from said housing.

20 31. An apparatus as set forth in claim 18 wherein said housing further includes channels for receiving a brush section.

32. An apparatus as set forth in claim 31 wherein said channels are further defined as C-shaped channels for receiving said brush sections.

33. An apparatus as set forth in claim 32 wherein said brush sections
5 further include a T-section securing a plurality of bristles, such that said T-section engages said C-shaped channel.

34. An apparatus as set forth in claim 18 wherein said housing is comprised of a metal material.

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35. An apparatus as set forth in claim 18 wherein said housing is comprised of a plastic material.